4.6 WILDLIFE

4.6.1 Introduction

This section describes potential impacts to wildlife resources associated with the construction and operation of the proposed Project and connected actions and discusses potential mitigation measures that would avoid or minimize the potential impacts. The information, data, methods, and/or analyses used in this discussion are based on information provided in the 2011 Final Environmental Impact Statement (Final EIS) as well as new circumstances or information relevant to environmental concerns that have become available since the publication of the Final EIS, including the proposed reroute in Nebraska. The information that is provided here builds on the information provided in the Final EIS and in many instances replicates that information with relatively minor changes and updates. Other information is entirely new or substantially altered from that presented in the Final EIS. Specifically, the following items have been substantially updated from the 2011 document related to impacts to wildlife resources:

- A new section (Section 4.6.2, Impact Assessment Methodology) was added to explain the assessment methodology used to evaluate potential wildlife resources impacts associated with the proposed Project;
- Revised important wildlife areas are listed to reflect the route modifications with specific emphasis on changes to the route through Nebraska; and
- The discussion has been expanded on potential impacts to big game mammals, small game mammals, and non-game wildlife.

4.6.2 Impact Assessment Methodology

The impacts of the proposed Project on wildlife resources have been evaluated using a combination of quantitative and qualitative assessments of the potential direct and indirect impacts to species and their habitat through literature review and consultation with regional biologists:

- Calculation of the distance to nearby raptor nests and the effects that active construction may have to this resource;
- Evaluation of the effects of the proposed Project to hunting;
- Calculation of the miles and acreage of habitats and important wildlife habitat potentially impacted; and
- Qualitative evaluation of the potential direct and indirect impacts to wildlife and their habitats resulting from the proposed Project's construction and operation activities.

4.6.3 Potential Impacts

Construction of the proposed Project would have direct and indirect, and temporary (short-term and long-term) and permanent impacts on wildlife resources. Direct impacts could occur due to vegetation removal or conversion, obstructions to movement patterns, or the removal of native habitats that may be used for foraging, nesting, roosting, or other wildlife uses (Barber et al. 2010). Indirect impacts to wildlife are difficult to quantify and are dependent on the sensitivity of

the species, individual, type and timing of activity, physical parameters (e.g., cover, climate, and topography), and seasonal use patterns of the species (Berger 2004). Short-term impacts on wildlife would occur during construction and may extend beyond construction activities. Disturbed habitat may not be returned to former levels of functionality for up to 3 years following restoration efforts (Braun 1998), but long-term impacts on wildlife could extend through the life of a project and possibly longer for those habitats that require many years to be restored (Harju et al. 2010). Permanent impacts would result from construction of aboveground facilities that convert natural habitat to land used for pipeline operations, and where operational maintenance of the right-of way (ROW) permanently alters vegetation characteristics (Braun 1998).

The proposed Project could affect wildlife resources through the following:

- Habitat loss, alteration, and fragmentation;
- Direct mortality during construction and operation;
- Indirect mortality because of stress or avoidance of feeding due to exposure to construction and operations noise, low-level helicopter or airplane monitoring overflights, and from increased human activity;
- Reduced breeding success from exposure to construction and operations noise and from increased human activity; and
- Reduced survival or reproduction due to less edible plants or reduced cover.

Construction of the proposed Project would result in disturbance of about 12,696 acres of various habitat types, including approximately 7,744 acres of grasslands and rangelands, 40 acres of upland forested habitat, and 636 acres of wetland habitats, including 58 acres of forested wetlands (see Table 3.6-1). In addition, about 150 temporary access roads (about 156 miles) and about 41 permanent access roads (about 20 miles) would be used; most (over 90 percent) would be modifications of existing roads. Four construction camps (approximately 80 acres each) would be established within remote areas crossed by the proposed Project route in Montana while three would be established in South Dakota and one camp would be established in Nebraska. Also, 6.3 acres of grassland and developed land would be impacted to construct a pump station in North Dakota and 15.2 acres of grass land and developed land would be impacted in Kansas to construct pump stations.

The proposed Project route would cross areas considered important habitats used by wildlife (see Table 4.6-1). Encompassing both public and private lands, these areas include wetland and conservation easements, Important Bird Areas (IBAs), river valleys, and state wildlife areas. Additional relevant information is pending and will be included in this review as part of the Final Supplemental Environmental Impact Statement (Supplemental EIS).

Table 4.6-1 Important Wildlife Habitats within or near the Proposed Project Area

Milepost	Name	Ownership and Description	Pipeline Miles Affected
	Montana		
4-5	U.S. Fish and Wildlife Service Wetland Easement	Private	0.8
26-68	North Valley Grasslands IBA	Private 45%, Bureau of Land Management 43%, State 11%, Tribal 1%	43.1
49-71	Cornwell Ranch Conservation Easement (proposed—overlaps IBA)	Montana Fish, Wildlife, and Parks	21.5
83	Milk River Valley	Montana Department of Natural Resources	~0.2
90	Missouri River Valley	Montana Department of Natural Resources	~1.0
196	Yellowstone River Valley	Montana Department of Natural Resources and Private	~0.5
Various	Conservation Reserve Programs	Private	na[a]
	South Dakota		
426	Cheyenne River Valley	na[a]	~0.7
537	White River Valley	na[a]	~0.2
Various	State Wildlife Areas	South Dakota Game, Fish, and Parks	20.7
Various	Conservation Reserve Program	Private	na[a]
	Nebraska		
602-623	Keya Paha River Valley	Various	22.4
623-628	Niobrara River Valley	Various	5.7
677-688	Verdigris/Bazile	Various	11.4
760-764	Loup River Valley	Various	5.2
778-847	Rainwater Basin	Various	69.5
Various	Conservation Reserve Program	Private	na[a]
TBD	Hosford Conservation Easement	Private	TBD

Source: Schneider et al. 2011, National Audubon Society 2012, Keystone 2012a.

[a] na = not available. Additional relevant information is pending and will be included in this review as part of the Final Supplemental EIS.

Fragmentation of wildlife habitat would result from the proposed Project. Fragmentation is the splitting of a large continuous expanse of habitat into numerous smaller patches of habitat with a smaller total habitat area, and isolation within a matrix of habitats that are unlike the original (Wilcove et al. 1986). Habitat fragmentation has two components: 1) reduction in total habitat area; and 2) reorganization of areas into isolated patches (Fahrig 2003). Habitat loss generally has adverse effects on biodiversity; fragmentation typically has a lower magnitude effect (relative to habitat loss) that may be either beneficial or adverse (Fahrig 2003). The effects of habitat fragmentation are dependent on many variables including original habitat structure, landscape context, predator communities, and susceptibility to nest parasitism (Tewksbury et al. 1998). Habitat fragmentation effects are typically most pronounced in forested and shrubland habitats and are generally reduced for pipeline corridors because their widths can be narrowed in sensitive habitats, vegetative cover is re-established in temporary working areas, and there is minimal human disturbance during operation (Hinkle et al. 2002). During construction, however, pipelines can be significant barriers to wildlife movements (Hinkle et al. 2002). After construction, pipeline corridors may be used as travel corridors by coyote, deer, raccoon, and

many other species. The following are wildlife habitat fragmentation issues relevant for pipeline construction and operation:

- Reduction in patch size of remaining available habitats;
- Creation of edge effects;
- Creation of barriers to movement;
- Intrusion of invasive plants, animals, and nest parasites;
- Facilitation of predator movements;
- Habitat disturbance; and
- Intrusion of humans (Hinkle et al. 2002).

Pipeline construction would remove vegetation including native grasses, shrubs, and trees, creating an unvegetated strip over the pipeline trench and the adjacent construction areas. Subsequent revegetation may not provide habitat features comparable to pre-Project habitats, and restoration of wetlands in arid regions is not always successful (Federal Energy Regulatory Commission [FERC] 2004). Removal of vegetation increases the potential for the establishment and spread of noxious weeds and other invasive plants that have little use or value for wildlife and that displace native plants, resulting in degraded wildlife habitat values. Freshly seeded grasses can attract domestic livestock and wildlife and are often preferentially grazed. Grazing of the ROW prior to the development of a self-sustaining vegetative cover could inhibit revegetation and extend the time to re-establish habitat linkages across the ROW. The pipeline ROW would be maintained free of trees and shrubs, resulting in long-term alteration of wildlife habitat structure and value. Approximately 18 acres of upland forest and 29 acres of forested wetland would be converted to non-forest habitat due to ongoing ROW maintenance.

Constructing the proposed pipeline could present a significant temporary physical barrier to wildlife movement. The open trench and welded pipeline sections stored along the construction ROW prior to burial could block movements of both large and small animals across the construction ROW. Small animals could also become trapped in open trench sections. Operation of heavy equipment could also create behavioral barriers to wildlife movements by displacing animals by disturbance.

After construction, the proposed pipeline ROW, unblocked temporary access roads, and permanent access roads could increase human activity especially within remote sections of the proposed Project route. This could lead to increased wildlife disturbance and potentially to increased direct wildlife mortality from vehicle-animal collisions, and legal and illegal killing of wildlife; and indirect mortality and reduced reproduction due to displacement, increased stress, and increased predation (Madson 2006, Montana Board of Oil and Gas Conservation [MBOGC] 1989, Wyoming Game and Fish Department [WYGF] 2004).

All-terrain vehicle users could travel on portions of the ROW, either legally or illegally. The construction of new roads, upgrades to existing roads, and the subsequent use of those roads generally would result in adverse impacts to a wide range of wildlife including elk and deer (Canfield et al. 1999), carnivores (Claar et al. 1999), small mammals (Hickman et al. 1999), birds (Hamann et al. 1999), and amphibians and reptiles (Maxell and Hokit 1999).

Some rangeland habitats crossed by the proposed Project route have not been extensively fragmented by road and transmission line networks, and exist as expanses of open mosaics of grasslands, shrublands, and croplands interrupted by forested draws. Fragmentation may be more consequential in shrublands than grasslands, as species dependent on sagebrush cover would become more exposed when crossing the proposed pipeline corridor. Additionally, sagebrush is slow growing and regeneration along the proposed pipeline route may be inhibited by increased foraging during the establishment of this species. Fragmentation of native grasslands would generally be considered short term, until sufficient herbaceous cover is re-established to allow small mammals, amphibians, and reptiles to cross without exposure. Fragmentation-related issues applicable to wildlife habitat types crossed by the proposed Project route are summarized in Table 4.6-2.

Table 4.6-2 Habitat Types and Related Fragmentation Issues

Habitat Type	Breaking Large Habitat into Smaller Areas	Hindered Movements	Nest Parasitism	Facilitated Predator Movements	Disturbance-Construction Maintenance	Human Intrusions
Upland Forests	x	x	x	x	x	x
Wetland Forests	x	x	x	x	x	x
Scrub-shrub Wetlands	x	x	x	x		x
Wetlands/Swamps	x	x				x
Aquatic/Riverine	x	x	x			x
Grassland/Prairie	x	x	x		x	x
Wildlife Type Affected	Birds, small mammals	Mammals, amphibians, reptiles	Birds	Birds, small mammals	Birds, mammals, amphibians, reptiles, invertebrates	Birds, mammals, amphibians, reptiles

Sources: Hinkle et al. 2002, Inglefinger 2001, Miller et al. 1998, Vander Haegen 2007.

Review of state land cover mapping produced for the U.S. Geological Survey's (USGS) Gap Analysis Program (USGS 2009) indicates that the proposed Project could potentially contribute to increased fragmentation of several contiguous areas (≥ 0.2 mile) of native grassland, shrubland, or forestland that would be crossed by the Project route within the important wildlife habitats identified in Table 4.6-1. Fragmentation may result in altered wildlife communities as animals adapted to exploiting edge habitats increase, and animals requiring large contiguous habitats are displaced. The severity of fragmentation-induced effects on wildlife communities depends on factors such as sensitivity of the animal, seasonal habitat use, type, and timing of construction activities, and physical habitat parameters such as topography, cover, forage, and climate (Miller et al. 1998).

Loss of shrublands and wooded habitats would be long term (from 5 to 20 years or more) within reclaimed areas of the construction ROW. Due to the linear nature of the ROW, these long-term habitat losses represent a small total area of locally available habitat and therefore are expected to have few long-term impacts on wildlife populations (see Tables 4.6-1 and 4.6-2).

Total habitat loss due to pipeline construction would likely be small in the context of available habitat, both because of the linear nature of the proposed Project and because restoration would follow construction. During restoration, the area would be reseeded as directed by the landowner or land management agency, such that in some instances areas of native vegetation could be converted to non-native species. Such conversion could reduce the value of the habitat for wildlife. If disturbance involved important remnant habitat types, habitat loss could be locally significant.

Normal operation, other than maintenance and pipeline inspections, of the proposed pipeline would generally result in negligible effects on wildlife. Direct impacts from maintenance activities, such as physical pipeline inspections or pipeline repair that would require digging up the pipeline, would be the same as those for construction. Some adverse effects to wildlife due to noise generated at pump stations may occur. High noise levels potentially can mask wildlife communications that are used to attract mates and defend territories. Increased noise and activity levels during construction and development could result in nest abandonment and decreased reproductive success if such activity occurs during the breeding season (Bureau of Land Management [BLM] 2000). Additionally, vibration detected in the soils surrounding roadways have been shown to cause certain invertebrates to ascend to soil surfaces allowing them to become prey to birds (U.S. Department of Transportation [USDOT] 2004). Potential impacts associated with the potential accidental release of petroleum products, hazardous materials, or crude oil during construction and operation of the proposed Project are addressed in Section 4.13, Potential Releases. Appropriate federal and state wildlife management agencies would be consulted prior to initiation of maintenance activities beyond standard inspection procedures.

4.6.3.1 Big Game Species

The primary big game species occurring in the proposed Project area include white-tailed deer (*Odocoileus virginianus*), elk (*Cervus canadensis*), mule deer (*Odocoileus hemionis*), bighorn sheep (*Ovis canadensis*), and pronghorn antelope (*Antilocapra americana*). Gray wolf (*Canis lupus*) may also be present in Montana and mountain lion (*Puma concolor*) may also be present in Montana and South Dakota. Impacts to big game may be both short term and long term, such as habitat loss and fragmentation, physiological stress, and forage loss.

For big game species, construction activities could result in increased agitation, physiological stress, and use of sub-optimal habitat. Animals can become physiologically stressed when energy expenditures increase due to alarm or behavioral avoidance (Lutz et al. 2011). These responses are often attributed to interactions with humans or activities associated with human presence such as traffic and noise. Physiological stress diverts time and energy away from critical activities such as foraging and resting, both of which are important to maintain or improve fitness (Gill et al. 1996, Frid and Dill 2002).

Construction of the proposed Project may alter migration routes and displace wildlife from preferred habitats (Sawyer et al. 2006) by creating barriers that hinder migration and use of these habitats (Sawyer et al. 2009).

Construction of permanent aboveground facilities would result in the permanent loss of undeveloped habitat for big game. Approximately 285 acres of undeveloped habitat (113 acres in Montana, 90 acres in South Dakota, 67 acres in Nebraska, and 15 acres in Kansas) would be

permanently lost due to the construction of permanent aboveground facilities. This loss of habitat would constitute a very small percentage of available habitats on a regional basis and would not likely affect big game populations in the proposed Project area.

Construction of the proposed Project could impact hunter success rates within the Project area. Hunting could be adversely affected due to construction activities occurring during hunting seasons, primarily due to the displacement of big game animals from construction and noise disturbance. Once the proposed pipeline is constructed, harvest rates could potentially increase after construction because of increased access by hunters using the pipeline ROW to access remote areas (Comer 1982). In addition, big game species that use a cleared ROW could be more likely to be hunted than animals in forested habitat. Increased hunting along cleared ROWs in the fall hunting season has been documented elsewhere (Crabtree 1984).

4.6.3.2 Small Game Species and Furbearers

Potential impacts on small game animals and furbearers include nest or burrow destruction or abandonment, and loss of young, foraging habitat, and cover habitat. Displacement of small game animals and furbearers from disturbance areas would be short term, as animals would be expected to return following completion of construction and reclamation activities. Small mammals could fall into and become trapped in the open trench during pipeline construction, potentially resulting in injury or mortality. Burrowing animals would be expected to return and recolonize the ROW after construction, although compacted areas such as temporary workspaces may become less suitable habitat (Lauzon et al. 2002). Disturbed areas through native prairie habitats also were found to be used less often by ground squirrels following construction of a gas pipeline, suggesting that these habitats may not be equivalent at least for several years after construction (Lauzon et al. 2002). Some badger (*Taxidea taxus*), ground squirrel (*Spermophilus* spp.), and rodent burrows would likely be destroyed during construction if they occur within the construction ROW. Badgers, ground squirrels, and burrowing rodents may be attracted by the warmth generated by the pipeline, especially during fall, winter, and spring months. The heat generated by the proposed pipeline would warm the soils within the proximity of the pipeline (see Appendix S, Pipeline Temperature Effects Study). Differences from surrounding soil temperature at the surface would be largest during spring. The pipeline would increase soil temperatures at the burial depth near the pipeline by as much as 40 degrees Fahrenheit and at a depth of 6 inches by as much as 10 to 15 degrees Fahrenheit, (see Appendix S, Pipeline Temperature Effects Study).

For animals that use tree and shrub habitats for cover, food, and nesting, losses of these habitat types would be long term because the permanent ROW would be maintained free of trees and large shrubs. An estimated 98 acres of forested habitats would be affected by construction of the proposed Project, of which an estimated 47 acres would be maintained as herbaceous vegetation. Those areas falling within the construction ROW would be cleared of trees and brush to provide access for construction equipment. Trees and shrubs would not be allowed to re-establish on the permanent ROW. Differences in vegetation cover between the ROW and the surrounding landscape could act as a barrier for some animals, such as snakes, lizards, mice, and tree squirrels, while acting as a movement corridor for others, such as coyotes (*Canis latrans*) and raccoons (*Procyon lotor*).

4.6.3.3 Waterfowl and Game Bird Species

Most waterfowl and game birds nest on the ground, although a few notable species such as wood ducks (*Aix sponsa*), mergansers (*Mergus* spp.), and mourning doves (*Zenaida macroura*) nest in trees. Direct impacts on small game bird species could include nest or burrow abandonment, loss of eggs or young, or death. Habitat loss, alteration, and fragmentation could occur until vegetation is re-established. After revegetation, the habitat could still be degraded due to the spread of noxious and invasive species, noise, and human presence. For species that use tree and shrub habitats for cover, forage, and nesting, losses of these habitats would be long term because trees and shrubs would require from 5 to 20 years or more to re-establish and the permanent ROW would be maintained free of trees and large shrubs. Migratory waterfowl could be attracted to the pipeline corridor during early spring if it becomes snow-free earlier than surrounding habitats. Communication towers at pump stations (generally 33 feet tall and no more than 190 feet tall) could be a collision hazard to waterfowl and game birds especially if supported by guy wires or if located near foraging and nesting habitats. Conversely, towers could provide vantage perches and artificial nesting habitat, depending on their configurations, for raptors and common ravens (*Corvus corax*) or crows (*Corvus brachyrhynchos*), which may prey on ground nesting upland game birds.

Sharp-tailed grouse (*Tympanuchus phasianellus*) inhabit native prairies and nest in grasslands. This species has disappeared from large portions of its historical range, primarily due to habitat loss or degradation resulting from agricultural practices, livestock overgrazing, and habitat succession. Breeding habitats are vulnerable to disturbance as these birds gather to breed near leks (areas where birds congregate and conduct courtship displays to attract mates). Nesting may be concentrated within several miles of active leks. Sharp-tailed grouse are also vulnerable to displacement by the creation of roads and power lines and reductions in habitat suitability due to fragmentation. The proposed pipeline would cross at least 16 known sharp-tailed grouse leks through Montana and South Dakota. Additional leks may be located in Nebraska along the proposed route in Nebraska and surveys will be conducted in 2013 to identify their potential locations (Keystone 2012b).

4.6.3.4 Non-game Animals

Small mammals, reptiles, amphibians, and non-flying insects would be blocked from moving across the open pipeline trench during construction. If timing of the open trench coincides with migration of snakes to their hibernation sites, large numbers of snakes could become trapped within the open trench. Trapped animals, especially small animals that would not normally be noticed by construction crews, would likely not survive if they became trapped. Erosion control blankets, especially those supported by fine, non-biodegradable, monofilament meshes, can entangle and entrap snakes, small mammals, and birds. Changes in vegetation cover and structure over the maintained ROW could inhibit movements of amphibians, reptiles, small mammals, and some birds. Reduction in riparian shrubs and trees could reduce riparian habitat function as a movement corridor for small mammals, furbearers, amphibians, and reptiles. Ripping for construction through rock outcrops, which may provide hibernacula (winter hibernation locations) for snakes, could destroy all or portions of these habitats. Removal of trees from the construction ROW and extra workspaces in woodlots, riparian areas, and shelterbelts could also lead to the destruction of bat roosting habitats. Communication towers at pump stations could be a collision hazard to migrating birds and may provide vantage perches and

artificial nesting habitat for raptors, ravens, or crows, which may prey on grassland and shrubland small mammals.

Construction could cause direct and indirect impacts to raptors and migratory birds. Raptors and migratory birds would be affected by an overlap of the proposed Project construction schedule with nesting seasons of birds in the Project area. Indirect impacts could be associated with increased human presence and noise from construction activity close enough to disturb actively nesting birds. Additionally, construction activity near active nests during incubation or brood rearing could result in nest abandonment; overheating, chilling, or desiccation of unattended eggs or young causing nestling mortality; premature fledging; or ejection of eggs or young from the nest (U.S. Fish and Wildlife Service [USFWS] 2007).

Removal of trees from the construction ROW and extra workspaces in woodlots, riparian areas, and shelterbelts could lead to the destruction of raptor and owl nests, migrant bird nests, and great blue heron (*Ardea herodias*) habitat. About 28 large stick nests were found inside the survey area, which covered the area within about 0.25 to 1 mile of the proposed Project centerline in Montana and South Dakota. Nest and rookery surveys in Nebraska will be conducted in spring 2013. Migratory birds and their active nests are protected under the Migratory Bird Treaty Act (MBTA) (see discussion below). Direct impacts to nesting migratory birds would be avoided by limiting construction to non-nesting periods during late summer through winter. If any of these nests or rookeries were actually located within the construction ROW, and if any nests were occupied when trees were cut, the nests, eggs, or young would be lost. Because most raptors reuse nest structures, loss of nest structures would require pairs to find new nest trees. If suitable new nest trees were not available within their established territory, new territories would need to be established within unoccupied territories. These processes would lead to increased energy demands during nesting and could lead to reduced or lost reproduction in subsequent years (USFWS 2007). Losses of tree and shrub habitats used by migratory birds for cover, forage, and nesting would be long term because from 5 to 20 years or more would be required to re-establish trees and shrubs, and the permanent ROW would be maintained free of trees and large shrubs.

Habitat fragmentation caused by changes in vegetation cover within the pipeline ROW through large blocks of forest, shrub-steppe, and grassland habitats would generally have the greatest effect on raptors and migrant songbirds (Hinkle et al. 2002, Vander Haegen 2007, Miller et al. 1998). The severity of fragmentation-induced effects on migratory birds would depend on factors such as sensitivity of the animal, seasonal habitat use, type, and timing of construction activities, and physical habitat parameters such as topography, cover, forage, and climate. Forest-nesting songbird abundance, diversity, and reproduction rates all become depressed as a result of fragmentation associated with linear developments (Jalkotzy et al. 1997). Habitat fragmentation leads to the creation of more edge habitats that in turn increase the susceptibility of nesting birds and other animals to predation, because many predators concentrate their search efforts within habitat edges (Montana Department of Natural Resources and Conservation [MDNRC] 1979). Predators such as coyotes, badgers, foxes, crows, jays, ravens, and others may use the cleared ROW for foraging, leading to reduced reproduction and survival for many small mammals and birds in proximity to the ROW. Nest parasitism by brown-headed cowbirds resulting in fewer young birds fledging successfully has been documented to increase when shrub habitat is fragmented (Vander Haegen 2007).

Habitats crossed by access roads and aboveground facilities could contribute to both temporary and long-term fragmentation. Bird community composition and productivity can change next to recreational trails in grassland and forest ecosystems. Birds are less likely to nest near trails in grasslands, and nest predation is greater near trails in both grassland and forests (Miller et al. 1998). Densities of sagebrush-obligate songbirds have been shown to decline within 100 meters of natural gas pipeline access roads, even under light traffic volumes (less than 12 vehicles per day), while horned lark (*Eremophila alpestris*) abundance has been shown to increase within 100 meters of roads (Inglefinger 2001).

The MBTA (Title 16 of the United States Code 703-712) prohibits the taking of any migratory bird or any part, nest, or egg, except as permitted by regulation. The MBTA was enacted in 1918; a 1972 agreement supplementing one of the bilateral treaties underlying the MBTA had the effect of expanding the scope of the Act to cover bald eagles and other raptors. Implementing regulations define *take* under the MBTA as "pursue, hunt, shoot, wound, kill, trap, capture, possess, or collect" (USFWS 2007). The Bald and Golden Eagle Protection Act (16 United States Code 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle . . . [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines take as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment (USFWS 2007).

The 1988 amendment to the Fish and Wildlife Conservation Act mandates that the USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." As a result of this mandate, the USFWS created the Birds of Conservation Concern list. The goal of this list is to prevent or remove the need for additional Endangered Species Act bird listings by implementing proactive management and conservation actions and coordinating consultations in accordance with Executive Order 13186. Migratory raptor species in the proposed Project area are generally considered sensitive and in need of specialized protective measures (USFWS 2007).

Nest and rookery surveys were conducted in 2008, 2009, and 2010 on the Final Environmental Impact Statement route. Additional nest surveys on the route through Montana and South Dakota were conducted in 2010, 2011, and 2012. Surveys for the Nebraska route that has changed from the route evaluated in the Final Environmental Impact Study are projected for completion in spring 2013. These surveys will assist in identifying where construction may affect active nests

(and, in the case of burrowing owls, cause direct impacts on nests and nesting habitat) and where buffer zones may be required (Table 4.6-3).

Table 4.6-3 General Spatial Buffer Restrictions[a] and Nesting Seasons for Raptors Potentially Present in the Project Area

Species	Spatial Buffer (Miles)	Nesting Season
Osprey (*Pandion haliaetus*)	0.25	April 1–August 31
Bald Eagle (*Haliaeetus leucocephalus*)	0.5-1.0	January 1–August 31
Northern Harrier (*Circus cyaneus*)	0.25	April 1–August 15
Sharp-shinned Hawk (*Accipiter striatus*)	0.25	March 15–August 31
Cooper's Hawk (*Accipiter cooperii*)	0.25	March 15–August 31
Northern Goshawk (*Accipiter gentilis*)	0.5	March 1–August 15
Broad-winged Hawk (*Buteo platypterus*)	NA[a]	NA[a]
Swainson's Hawk (*Buteo swainsoni)*	0.25	April 1–August 31
Red-tailed Hawk (*Buteo jamaicensis*)	0.33	March 15–August 15
Ferruginous Hawk (*Buteo regalis*)	1.0	March 1-August 1
Rough-legged Hawk (*Buteo lagopus*)	NA[a]	NA[a]
Golden Eagle (*Aquila chrysaetos*)	0.5	January 1–August 31
American Kestrel (*Falco sparverius*)	0.125	April 1-August 15
Merlin (*Falco columbarius*)	0.25	April 1–August 31
Gyrfalcon (*Falco rusticolus*)	NA[a]	NA[a]
Peregrine Falcon (*Falco peregrinus*)	1.0	February 1–August 31
Prairie Falcon (*Falco mexicanus*)	0.5	April 1-August 31
Barn Owl (*Tyto alba*)	0.125	February 1–September 15
Eastern Screech-Owl (*Megascops asio*)	0.125	Varies
Great Horned Owl (*Bubo virginianus*)	0.125	December 1–September 31
Snowy Owl (*Bubo scandiacus*)	0.125	May 1–September 31
Burrowing Owl (*Athene cunicularia*)	0.25	March 1–August 31
Barred Owl *(Strix varia*)	0.25	February 1–August 31
Long-eared Owl (*Asio otus)*	0.125	February 1–August 15
Short-eared Owl (*Asio flammeus*)	0.25	March 1–August 1
Northern Saw-whet Owl (*Aegolius acadicus*)	0.125	March 1-August 31

Source: Whittington and Allen 2008, Cornell Lab of Ornithology 2012.

[a] This species does not nest within the proposed Project area; NA = not applicable.

Based on nest surveys conducted to date, known areas where construction activities may coincide with raptor nesting on rock outcrops or clay ridges include:

- One inactive unidentified hawk (*Buteo* sp.) nest, Valley County, Montana;
- One active red-tailed hawk (*Buteo jamaicensis*) nest, Prairie County, Montana;
- One inactive unidentified hawk nest, Prairie County, Montana;
- Four inactive unidentified hawk nests, Fallon County, Montana;
- Three inactive ferruginous hawk (*Buteo regalis*) nests, Harding County, South Dakota; and
- One inactive unidentified hawk nest, Tripp County, South Dakota

Additional discussion of impacts to listed threatened and endangered species is provided in Section 4.8, Threatened and Endangered Species and Species of Conservation Concern.

4.6.3.5 Mitigation Measures

The proposed pipeline has been carefully designed to avoid most state, federal, and local managed habitat. To reduce potential construction- and operations-related effects where habitat is crossed, procedures outlined in the proposed Project Construction, Mitigation, and Reclamation Plan (CMRP) (Appendix G) would be implemented. Measures to minimize adverse effects to wildlife habitats, including shelterbelts, windbreaks, and living snow fences, are identified in the CMRP. Pipeline construction would be conducted in accordance with required permits. The following measures to minimize impacts to wildlife, as identified in the CMRP, would be implemented:

- Remove shavings produced during pipe bevel operation immediately to ensure that livestock and wildlife do not ingest this material.
- Collect and remove litter and garbage that could attract wildlife from the construction site at the end of the day's activities.
- Prohibit feeding or harassment of livestock or wildlife.
- Prohibit construction personnel from having firearms or pets on the construction ROW.
- Ensure all food and wastes are stored and secured in vehicles or appropriate facilities.
- Reseed disturbed native range with native seed mixes after topsoil replacement.
- Coordinate the suitability of fertilizers and pH modifiers in native rangelands to minimize the potential spread of non-native and invasive species with agricultural agents/rangeland experts and manage accordingly.
- Coordinate with landowners to discourage intensive grazing in the restored forested areas along the construction ROW during the first five growing seasons.
- Control unauthorized off-road vehicle access to the construction ROW through use of signs, slash and timber barriers, pipe barriers, boulders, or planted conifers or other appropriate trees or shrubs in accordance with landowner or manager request.
- To prevent unauthorized access, and to the extent permitted by landowners, TransCanada Keystone Pipeline, LP (Keystone) would secure/lock temporary gates when construction activities are not occurring. Also to the extent permitted by landowners, Keystone would make reasonable efforts to restrict access to the pipeline corridor via access roads after construction to minimize increased human use in formerly inaccessible areas.
- Develop a Migratory Bird Conservation Plan in consultation with USFWS to comply with the MBTA and implement provisions of Executive Order 13186 by providing benefits to migratory birds and their habitats within the states where the proposed Project would be constructed, operated, and maintained.
- Develop construction timing restrictions and buffer zones, such as those described in Table 4.6-4, through consultation with regulatory agencies for the proposed Project.
- Prohibit cutting of active raptor nest trees during the nesting season.

- If construction would occur during the April 15 to July 15 grassland ground-nesting bird season, complete nest-drag surveys to determine the presence or absence of nests on BLM lands in Phillips County, Montana.
- If construction would occur during the raptor nesting season during January to August, complete pre-construction surveys to locate active nest sites to allow for appropriate construction scheduling.

Table 4.6-4 Seasonal Timing Restrictions[a] and Buffer Distances for Big Game Animals, Game Birds, and Raptors

Animal and Habitat Type	State	Buffer Distance	Seasonal Timing Restrictions
White-tailed deer–winter range	Montana	NA	December 1 to March 31 (MFWP) & December 1 to May 15 (BLM)
Mule deer–winter range	Montana	NA	December 1 to March 31 (MFWP) & December 1 to May 15 (BLM)
Antelope–winter range	Montana	NA	December 1 to March 31 (MFWP) and December 1 to May 15 (BLM)
Snakes–hibernacula	Montana	NA	October 1 to May 1 (MFWP)
Sharp-tailed Grouse–active lek and nesting habitat	Montana South Dakota	0.25 mile (MFWP & BLM)	March 1 to June 15
Rookeries–Great Blue Herons or Double Crested Cormorants	Montana	0.31 mile (MFWP)	May 1 to July 31 (MFWP)
Raptors and Herons–active nests and rookeries	Entire ROW	0.5 mile (MFWP) 0.25 mile no surface occupancy (MWFP & BLM) 0.5 mile timing limitations (BLM)	March 1 to August 1 (MFWP) March 1 to July 31 (BLM) February 1 through August 15 (USFWS)

[a] Timing restrictions for federal and state-listed endangered, threatened, or candidate species and species identified as conservation concerns or priority are discussed in Section 4.8, Threatened and Endangered Species and Species of Conservation Concern. Timing restrictions for aquatic animals are discussed in Section 4.7, Fisheries.

In Montana, the proposed Project would employ the wildlife mitigation measures included in Appendix A to the Environmental Specifications developed for the Project by the Montana Department of Environmental Quality (MDEQ) (see Appendix N, Supplemental Information for Compliance with MEPA). On federal lands in Montana and South Dakota, the proposed Project would employ wildlife mitigation measures attached to the federal grant of ROW. In South Dakota, the proposed Project would employ mitigation measures to satisfy the conditions that were developed by the South Dakota Public Utility Commission and attached to its Amended Final Decision and Order, Notice of Entry HP09-001. Additional wildlife mitigation measures would include the following:

- In Montana, conduct surveys of sharp-tailed grouse leks prior to construction using approved methods to detect lek locations that can be seen from the construction ROW (MDEQ and Montana Fish, Wildlife, and Parks [MFWP]).
- From March 1 to June 15, prohibit construction and routine maintenance activities within 0.25 mile of an active sharp-tailed grouse lek that can be seen from the construction ROW (MDEQ, MFWP, and BLM).

- Avoid construction and reclamation activities within 0.62 mile of active raptor nests between March 15 and July 15 (MDEQ and MFWP).
- Avoid great blue heron rookeries by at least 500 feet (MDEQ and MFWP).
- Minimize tree clearing through a narrowing of the construction ROW and final centerline location near certain stream crossings to minimize impacts to bats and other wildlife associated with riparian habitats (MDEQ and MFWP).
- Within winter ranges for pronghorn and mule deer in Montana, develop construction timing restrictions after November 15 in consultation with MFWP biologists based on the severity of winter conditions (MDEQ and MFWP).
- To protect small animals from entanglement, do not use erosion materials that incorporate plastic netting with openings less than 2 inches across (MDEQ and MFWP).

4.6.4 Recommended Additional Mitigation

No additional mitigation measures are recommended or required.

4.6.5 Connected Actions

4.6.5.1 Bakken Marketlink Project

Construction and operation of the Bakken Marketlink Project would include metering systems, three new storage tanks near Baker, Montana, and two new storage tanks within the boundaries of the proposed Cushing tank farm. The property proposed for the Bakken Marketlink facilities near Pump Station 14 is currently used as pastureland and hayfields and a survey of the property indicated that there were no observations of listed species or listed species habitat, nor were there raptors, waterbodies, or wetlands observed on the property. Additional relevant information is pending and will be included in this review as part of the Final Supplemental EIS.

4.6.5.2 Big Bend to Witten 230-kV Transmission Line

Upgrades to the power grid in South Dakota to support power requirements for pump stations would include construction of a new 230-kilovolt (kV) transmission line and a new substation. Construction and operation impacts on wildlife would be the same as for the distribution lines discussed above; however, it is likely that the poles for the 230-kV line would be larger and that the area disturbed around the installation site would likely be larger.

The transmission poles along the line would be a maximum of 115 feet tall with an average span of approximately 800 feet and there are no guy wires proposed. Lengths of vegetation communities crossed by the preferred route are presented in Table 4.5-4. The preferred route would cross approximately 76 miles of habitat. Over 99 percent of impacts to habitat occur to grassland/pasture, developed land, and agricultural lands. The transmission line route would cross the White River and several smaller streams. Transmission line crossings of the larger rivers would likely increase collision hazard for migrant and breeding waterfowl at these locations, as discussed above. Collision and electrocution impacts on birds resulting from construction of the 230-kV transmission line would be reduced through implementation of the same mitigation measures discussed above for power distribution lines to pump stations.

Additional relevant information is pending and will be included in this review as part of the Final Supplemental EIS.

4.6.5.3 Electrical Distribution Lines and Substations

Electrical distribution line construction and operation would require clearing of trees and shrubs, and maintaining vegetation under the power lines in an herbaceous state. Power distribution lines and substations constructed to provide power for the proposed Project pump stations could affect wildlife resources through the following:

- Habitat loss, alteration, and fragmentation;
- Direct morality during construction;
- Direct mortality due to collision with or electrocution by power distribution lines;
- Stress or avoidance of feeding due to exposure to construction and operations noise, and from increased human activity;
- Loss of breeding success from exposure to construction and operations noise, and from increased human activity; and
- Reduced survival and reproduction for ground nesting birds due to the creation of perches for raptors in grassland and shrubland habitats.

Preliminary siting information indicates that approximately 377 miles of new electric distribution lines would be necessary to power pump stations along the proposed pipeline ROW for the Project (see Section 2.1.12.3, Electrical Distribution Lines and Substations) in Montana, South Dakota, Nebraska, and Kansas. Wildlife habitats potentially affected by construction and operation of distribution lines include 119 miles of grassland/rangeland, 22 miles of cropland, less than 1 mile of upland forest, 2 miles of wetland and water, and 8 miles of developed land. Locations for electric distribution lines through Nebraska have not yet been determined but they would likely impact croplands and grassland/rangelands.

The power distribution lines to Pump Stations 9 and 10 would cross the Milk River and associated oxbows and wetlands in Phillips County, Montana, and are expected to present a collision hazard for waterfowl. The power distribution line to Pump Station 9 would cross approximately 15 miles of the Glaciated Prairie Sage-Steppe IBA. This IBA encompasses an expanse of largely unbroken sage brush shrub-steppe and prairie grassland supporting the greater sage-grouse, a species of global concern (Montana Audubon 2008). The power distribution line to Pump Station 10 would cross approximately 19 miles of the North Valley Grasslands IBA and may impact survival and reproduction for ground nesting grassland birds; and approximately 2 miles of the Charles M. Russell National Wildlife Refuge, an IBA that supports 15 birds of global conservation concern (Montana Audubon 2008). Other power distribution line routes would also cross smaller rivers and streams that are likely to attract raptors and migratory birds. Raptor nest surveys of power line routes for Pump Stations 9 to 20 identified 13 active raptor nests within 1 mile of proposed power line routes. Six of these nests occurred within 0.5 mile of a proposed power line route.

Power distribution lines across riparian and wetland habitats provide perches that facilitate eagle, hawk, and falcon predation on waterfowl and shorebirds. Newly constructed power distribution lines across grasslands, shrublands, croplands, and pastures that are used by grassland nesting

songbirds and grouse could be used as vantage perches by raptors, facilitating predation on these ground-nesting birds. Location of poles across grassland and shrubland habitats would reduce habitat suitability for ground-nesting birds, potentially resulting in functional habitat loss and population declines through site avoidance. New electric power distribution line segments would increase the collision potential for migrating and foraging birds. Factors influencing collision risk are related to the avian species, the environment, and the configuration and location of lines. Species-related factors include habitat use, body size, flight behavior, age, sex, and flocking behavior. Heavy-bodied, less agile birds—or birds within large flocks, as is typical of migrating sandhill cranes—may lack the ability to quickly negotiate obstacles, making them more likely to collide with overhead lines. Environmental factors influencing collision risk include weather, time of day, lighting and line visibility, land use practices that may attract birds (such as grain fields), and human activities that may flush birds (such as nearby roadways). Power distribution line-related factors that influence collision risk include the configuration and location of the line, conductor, ground wire, and guy wire diameter, and line placement with respect to other structures or topography (Avian Power Line Interaction Committee [APLIC] and USFWS 2005).

Birds are electrocuted by power distribution lines principally because of two factors: 1) environmental factors such as topography, vegetation, available prey, and other behavioral or biological factors that influence avian use of power poles; and 2) inadequate separation between energized conductors or energized conductors and grounded hardware that provide two points of contact (APLIC and USFWS 2005). Raptors are opportunistic and may use power poles for nesting sites, vantages for territorial defense, or vantages for hunting. Power poles and lines may provide perches for hunting that offer a wide field of view above the surrounding terrain (APLIC and USFWS 2005). Collision and electrocution impacts on birds resulting from construction of distribution lines would be reduced by mitigation requirements imposed by state and federal regulatory agencies, including the following:

- Incorporate Avian Protection Plan Guidelines (APLIC and USFWS 2005) into the routing, design, and operation of the electrical distribution lines to reduce likelihood for collision and electrocution mortality of migratory birds, which could include:
  - Routing to avoid construction of new lines in high-use bird areas to avoid areas with grouse leks, brood-rearing habitat, and habitats that support wintering raptors;
  - Reduction of the risk of collisions by burying new power lines over short segments where they cross known flight paths of birds, especially next to wetland areas and near grouse leks; and
  - Reduction of the risk of collisions by using marking techniques to increase visibility of overhead wires to birds.
- Incorporate standard, avian-safe designs, as outlined in *Suggested Practice for Avian Protection on Power Lines* (APLIC and USFWS 2006, APLIC and USFWS 2005), into the design of electrical distribution lines in areas of identified avian concern to prevent electrocution, including:
  - Use of a minimum 60-inch separation between energized conductors/hardware and grounded conductors/hardware to protect eagles;
  - Increased separation where necessary to achieve adequate separation for types of birds involved;

- Covering energized parts and/or grounded parts to provide incidental contact protection for birds; and
- Application of perch management techniques where appropriate.

Additional relevant information is pending and will be included in this review as part of the Final Supplemental EIS.

4.6.6 References

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